



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/725,166	11/29/2000	Avner Pierre Badehi	41158	8559

1609 7590 05/08/2002

ROYLANCE, ABRAMS, BERDO & GOODMAN, L.L.P.
1300 19TH STREET, N.W.
SUITE 600
WASHINGTON,, DC 20036

EXAMINER

THAI, LUAN C

ART UNIT	PAPER NUMBER
----------	--------------

2827

DATE MAILED: 05/08/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/725,166

Applicant(s)

BADEHI, AVNER PIERRE

Examiner

Luan Thai

Art Unit

2827

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 March 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4, 6-14, 16-24 and 26-40 is/are pending in the application.
- 4a) Of the above claim(s) 20-24, 26-29, 33, 34 and 36 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 6-14, 16-19, 30-32, 35 and 37-40 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 12.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

This Office action is responsive to the amendment filed March 11, 2002.

Claims **1-4, 6-14, 16-24, and 26-40** (claims 37-40 are newly added claims) are pending in this application.

Claims **20-24, 26-29, 33-34, and 36**, have been withdrawn from consideration as being directed to a non-elected invention.

Claims **5, 15, and 25** have been canceled.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

2. Claims 1-2, 4, 6-11, 13, 16-19 and 37 are rejected under 35 U.S.C. 102(e) as being anticipated by Spaeth et al. (5,981,945).

The figures and reference numbers referred to in this office action are used merely to indicate an example of a specific teaching and are not to be taken as limiting.

Regarding claims 1-2, 4, 7-11, 13, 17-19, and 37 Spaeth et al. disclose (specifically see figures 1-4) a chip packaged silicon crystalline substrate comprising: a silicon crystalline substrate 1 (Col. 3, lines 23+) having formed

thereon an optoelectronic structure 6, a transparent layer 8 sealing over the optoelectronic structure 6 by an adhesive layer 9 (Col. 7, lines 3+) and defining therewith at least one gap between the silicon crystalline substrate 1 and the transparent layer 8, wherein the optoelectronic structure 6 receives light via the transparent layer 8.

Regarding claims 6 and 16, Spaeth et al. further disclose the at least one gap between the crystalline substrate 1 and the at least one transparent layer 8 (18) comprising a plurality of gaps (see figure 4).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 3 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Spaeth et al. (5,981,945) in view of Sogard (6,215,642).

The figures and reference numbers referred to in this office action are used merely to indicate an example of a specific teaching and are not to be taken as limiting.

Regarding claims 3 and 12, Spaeth et al. disclose(s) all the limitations of the claimed invention as detailed above except for the adhesive comprising epoxy. However, an adhesive comprising of epoxy is conventionally used in semiconductor art for attaching a cover or a membrane to a silicon substrate, as

taught by Sogard (Col. 6, lines 35). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the conventional adhesive comprising epoxy to bond the transparent layer 8 to the silicon substrate 1 in Spaeth et al.'s structure device, since such adhesive comprised epoxy is conventionally used in the art as being taught by Sogard. Furthermore, it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

5. Claims 14, 30 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Spaeth et al. (5,981,945) in view of Eda et al. (5,925,973).

The figures and reference numbers referred to in this office action are used merely to indicate an example of a specific teaching and are not to be taken as limiting.

Regarding claims 14, 30 and 35, Spaeth et al. disclose(s) all the limitations of the claimed invention as detailed above except for specifying the crystalline substrate comprising lithium niobate (as recited in claim 14), lithium tantalate (as recited in claim 30), or quart (as recited in claim 35). However, lithium niobate, lithium tantalate and quart are conventional materials in the art for making a crystalline substrate as being taught by Eda et al. (Col. 2, lines 35+). It would have been obvious to one of ordinary skill in the art at the time the invention was made to form the crystalline substrate comprising either lithium niobate (as recited in claim 14), lithium tantalate (as recited in claim 30), or quart

(as recited in claim 35), since such materials are well known in the art for making a crystalline substrate as being taught by Eda et al.

6. Claims 31-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Spaeth et al. (5,981,945).

The figures and reference numbers referred to in this office action are used merely to indicate an example of a specific teaching and are not to be taken as limiting.

Regarding claims 31 and 32, applicant's claimed structures in claims 31 and 32 do not distinguish over the proposed device of Spaeth et al. and it has been held that a recitation (e.g., microstructure comprises a surface acoustic wave device) with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations. *Ex Parte Masham*, 2 USPQ F.2d 1647 (1987).

7. Claims 1-4, 7-13, 17-19, 31-32, and 37-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Martin (5,610,431) in view of either Spaeth et al. (5,981,945), Suzuki et al. (5,660,741), Jerman (5,824,204), or Sogard (6,215,642).

The figures and reference numbers referred to in this office action are used merely to indicate an example of a specific teaching and are not to be taken as limiting.

Regarding claims 1-4, 7-8, 10-13, 17-18, and 37, Martin discloses (specifically see figures 7-8-9) a chip scale packaged crystalline substrate

comprising: a substrate 48 comprising silicon (Col. 7, lines 47-48, Col. 6, lines 55+) having formed thereon a micro-electronic structure 50, a transparent layer 20 (20') of glass (Col. 5, lines 8+) which is sealed over the micro-electronic structure by anodic bonding or by diffusion bonding (Col. 7, lines 3+) and defines therewith a gap between the silicon substrate 48 and the transparent layer 20 (20'), wherein the micro-electronic structure receives light via the transparent layer (Col. 5, lines 8+). Martin discloses a transparent layer 20 (20') of glass is sealed over the micro-electronic structure to the silicon substrate 48 by anodic bonding or by diffusion bonding but Martin does not explicitly teach the means of an adhesive.

Bonding a transparent substrate (e.g., glass) to a silicon substrate by an adhesive (e.g., epoxy) is conventional in semiconductor art, specifically in microstructure art, as taught by Spaeth et al. (Col. 4, lines 1+), Suzuki et al. (Col. 5, lines 31+), Jerman (Col. 2, lines 44+), and Sogard (Col. 6, lines 35+). It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the well known bonding adhesive to bond the transparent layer 20 to the silicon substrate 48 in Martin's structure device, since such bonding adhesive is conventionally used in the art as disclosed by Spaeth et al. (Col. 4, lines 1+), Suzuki et al. (Col. 5, lines 31+), Jerman (Col. 2, lines 44+), and Sogard (Col. 6, lines 35+).

Regarding claims 9 and 19, applicant's claimed structures in claims 9 and 19 do not distinguish over the proposed device of Martin and it has been held

that a recitation (e.g., microstructure comprises a optoelectronic structure) with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations. *Ex Parte Masham*, 2 USPQ F.2d 1647 (1987). In addition, Spaeth et al. while related to a similar microstructure design also teach an optoelectronic structure 6 formed on a silicon substrate 1 and a transparent layer 8 being sealed the optoelectronic structure by means of an adhesive 9. It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply Martin's structure for an optoelectronic as taught by Spaeth et al. and such modification is held to be within a general skill of a worker in the art.

Regarding claims 31 and 32, applicant's claimed structures in claims 31 and 32 do not distinguish over the proposed device of Martin and it has been held that a recitation (e.g., microstructure comprises a surface acoustic wave device) with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations. *Ex Parte Masham*, 2 USPQ F.2d 1647 (1987).

Regarding claims 38-40, the proposed device of Martin further disclose(s) the silicon substrate 48, the microstructure 50, and the transparent layer 20(20') forming a chip scale package, wherein the chip scale package comprises a

multiplicity of electrical contacts 66 plated along edge surfaces thereof (see figure 9).

8. Claims 14, 30, and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Martin (5,610,431) in view of either Spaeth et al. (5,981,945) and further in view of Eda et al. (5,925,973).

The figures and reference numbers referred to in this office action are used merely to indicate an example of a specific teaching and are not to be taken as limiting.

Regarding claims 14, 30, and 35, the proposed device of Martin and Spaeth et al. disclose(s) all the limitations of the claimed invention as detailed above except for specifying the crystalline substrate comprising lithium niobate (as recited in claim 14), lithium tantalate (as recited in claim 30), or quart (as recited in claim 35). However, lithium niobate, lithium tantalate and quart are conventional materials in the art for making a crystalline substrate as being taught by Eda et al. (Col. 2, lines 35+). It would have been obvious to one of ordinary skill in the art at the time the invention was made to form the crystalline substrate comprising either lithium niobate (as recited in claim 14), lithium tantalate (as recited in claim 30), or quart (as recited in claim 35), since such materials are well known in the art for making a crystalline substrate as being taught by Eda et al.

The following reference(s) is/are cited as of interest to this application:

U.S. Pat. No. 6,111,274 to Arai is/are cited for showing a crystalline substrate may comprises of Si, quartz, GaAs, ZnSe, ZnS, Gap, and InP, for example (Col. 11, lines 47+).

U.S. Pat. No. 6,168,965 to Malinovich et al. is/are cited for showing chip scale package crystalline-based device having multiplicity of electrical contacts plated along edge surface thereof.

Conclusion

9. Applicant's arguments with respect to claims **1-4, 6-14, 16-24, 26-36**, and newly added claims **37-40** have been fully considered, but they are deemed to be moot in view of the new grounds of rejection.

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action because the underlined portions of claims 1, 10, the changes in claims 6, 16, 26, 32, and newly added claims 37-40 raise new issues that would require further consideration and/or search. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Luan Thai whose telephone number is (703) 308-1211. The examiner can normally be reached on 7:00 AM - 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David L. Talbott can be reached on (703) 305-9883. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Luan Thai
May 3, 2002



DAVID L. TALBOTT
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800